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JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

(11) Publication number: **07101728 A**

(43) Date of publication of application: **18.04.95**

(51) Int. Cl. **C01G 45/12**  
**H01M 4/02**  
**H01M 4/58**  
**H01M 10/36**

(21) Application number: **05267804**

(22) Date of filing: **01.10.93**

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**(54) LITHIUM MANGANESE DOUBLE OXIDE, ITS  
PRODUCTION AND APPLICATION**

**(57) Abstract:**

**PURPOSE:** To obtain a lamellar  $\text{LiMnO}_2$  used as a positive pole material for lithium secondary battery fine and large in surface area and showing high output and high energy density, and capable of applying for various uses as a host compound without restricting the atmosphere by specifying particle diameter and BET specific surface area.

**CONSTITUTION:** The lamellar  $\text{LiMnO}_2$  is composed of particles having  $\leq 5\mu\text{m}$  particle diameter and  $\approx 10\text{m}^2/\text{g}$

BET specific surface area. The acicular hydrated manganese oxide ( $\gamma\text{-MnOOH}$ ) having the equivalent diameter to  $\leq 1\mu\text{m}$  minor axis diameter,  $\leq 5\mu\text{m}$  major axis diameter and  $\leq 1\mu\text{m}$  thickness is used to synthesize the lamellar  $\text{LiMnO}_2$ . The acicular hydrated manganese oxide is stirred in a Li containing alkaline aq. solution  $\approx 1.0$  in Li/Mn mol ratio and  $\approx 1.0$  in OH/Mn mol ratio, heated at  $\leq 200^\circ\text{C}$  in an atmosphere containing oxygen and heated at  $\approx 200^\circ\text{C}$  in an atmosphere containing no oxygen to remove water.

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